



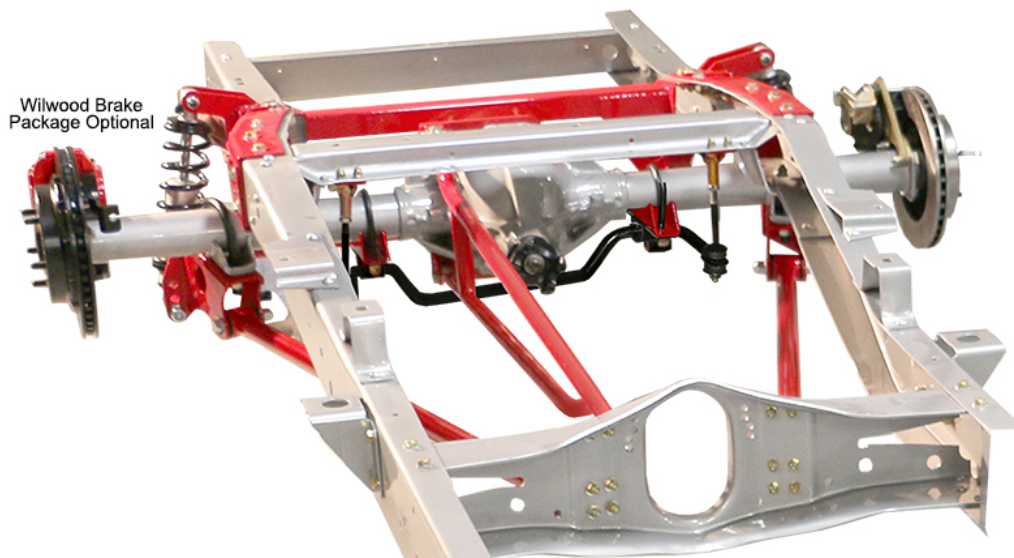
## C10 Chevy Truck Torque Arm Suspension Installation Instructions

Tech line: 1-855-693-1259

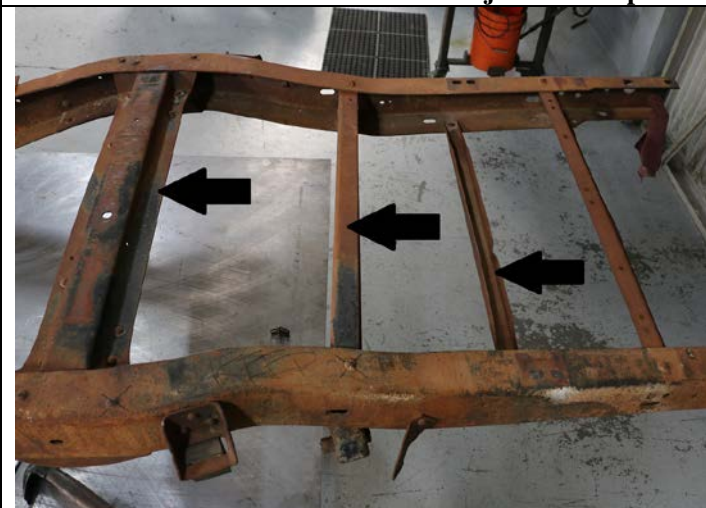
[www.totalcostinvolved.com](http://www.totalcostinvolved.com)

**Read and understand these instructions before starting any work!**

**USE THE PARTS LIST BELOW TO MAKE SURE YOUR KIT IS COMPLETE BEFORE INSTALLATION.  
FOR MISSING PIECES, PLEASE CONTACT: Total Cost Involved Engineering 855-693-1259**



**The bed must be removed in order to install these components. \*Before beginning work vehicle must be securely positioned on jack stands preferably at desired ride rake/height.**



There are 3 crossmembers at the rear portion of the frame that are relevant to this installation.

The large crossmember on the left will remain in the chassis but there are 2 rivets per side that need to be removed (details to follow)

The middle crossmember will be removed completely. (details to follow)

The small crossmember on the right will only be removed if you are going to use a rear mounted fuel tank. (details to follow)



The most rearward rivet head marked with an X needs to be removed. Cut the head off the rivet and drill or center punch it out.

This is where the new TCI Engineering boxing plates are going to lay flush against the frame. We will be reusing these holes with the new boxing plates.



There is another rivet head on the bottom side of the frame that will need to be removed. It is directly below the one we just removed in the previous step.

Repeat this process for the other side of the chassis.



There is a small flange sticking out from the bottom of the frame that must be removed in order for the boxing plate to fit into place.



Once you've cut the flange off grind the lip flush with the frame.

Repeat this process for the other side of the truck.





Both bump stop brackets must be removed.



The factory shock mounts must be removed also. There are two rivets holding them onto the crossmember, one in the front, one in the rear.

\*Front rivet pictured



\*Rear rivet pictured

Repeat this process for the other side of the truck.



Grind and/or cut the rivet heads off of the middle crossmember (The one pictured at the beginning of the install manual)



Once all the rivet heads have been removed using a mallet, break it loose and completely remove it.



**\*OPTIONAL\***

The rearmost small crossmember only needs to be removed if you plan to use a rear mounted fuel tank.



The factory Truck Arm attachment points must be removed. There are 6 rivets holding each bracket in place.

We will be reusing these holes with the new brackets.



Brackets completely removed

**\*NOTE\*** The 2 piece driveshaft mount will also need to be removed (some trucks will not have it) for use with a 1-piece driveshaft **\*RECOMMENDED\***





Place the C-Notch plate onto the frame at the axle centerline. There are 4 existing holes on the frame that line up with the new plate but they are too small so we will need to drill them out to 7/16". Use a sharpie and mark one of the holes (we chose the front/top hole) for alignment.

**\*NOTE\*** We marked the C-Notch plate with X's to show which holes should be lined up.

\*Passenger side shown



Remove the C-Notch plate and drill one of the holes, we chose the front/top hole.

**\*NOTE\*** We marked the plate with X's to show which holes should be lined up.

\*Passenger side shown



**\*NOTE\*** The use of Anti-Seize on all hardware is highly recommended.

Place the C-Notch plate back onto the frame and install one bolt/nut into the new hole that was just drilled and tighten it down. This is to keep the plate firmly against the frame.

\*Passenger side shown



Clamp the C-Notch plate firmly against the frame rail, both vertically and horizontally.

Drill the rear most hole.

Install and tighten a bolt/nut into this hole.

\*Passenger side shown



Continue drilling the 3 remaining existing holes and install hardware as you go.

\*Passenger side shown



This is what the Passenger side should look like at this point.



We can now begin the same process on the Driver side. There are only 3 existing holes that line up on this side. Place the C-Notch plate onto the frame at the axle centerline and align the 3 holes.



Once again, we began with the front/top hole.

\*Driver side shown





Place the C-Notch plate back onto the frame and install one bolt/nut into the new hole that was just drilled and tighten it down. This is to keep the plate firmly against the frame.

Clamp the C-Notch plate firmly against the frame rail, both vertically and horizontally.

\*Driver side shown



Continue drilling the 2 remaining existing holes and install hardware as you go.

\*Driver side shown



Since the Driver side only had 3 existing bolt holes we are going to drill thru the rear most bolt hole on the C-Notch plate.

\*Driver side shown



Install the 4<sup>th</sup> bolt/nut into the newly drilled hole.

\*Driver side shown



Using a sharpie and mark the frame at the C-Notch opening. Repeat for the Passenger side.

\*Driver side shown

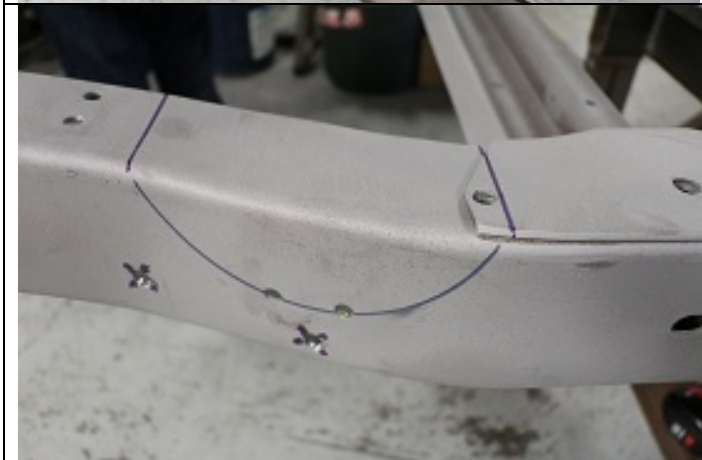


We temporarily flipped our chassis over to show these steps more clearly. Lay a straight edge across both frame rails. Line up the edge of the C-Notch on both Passenger and Driver sides.



Mark the front and rear edge of the C-Notch.

Your lines should be parallel to each other.



Remove both C-Notch plates





Cut out the marked area of the frame rail.



The Plasma cutter leaves a pretty rough edge so we ground it back smooth.



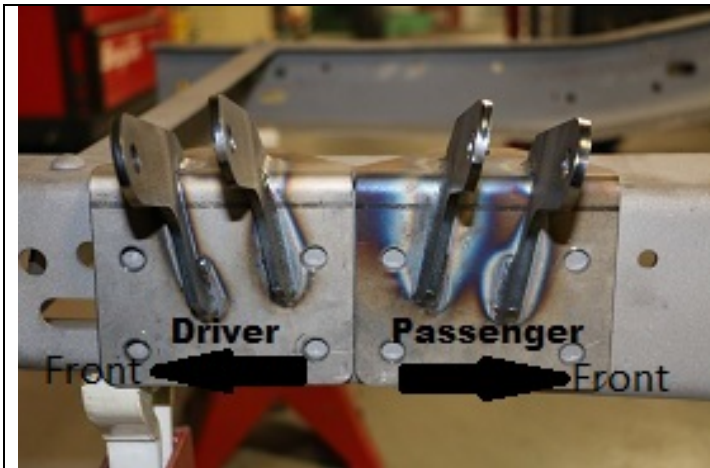
Place both C-Notch plates back onto the frame. Drop the front bolt back into the top of each plate and tighten them down. (The top/rear most bolt can be dropped into place but do not tighten it down yet) Place the side plates up against the frame rail making sure that you've cut the C-Notch openings enough to clear.

\*Passenger Side Shown



With the side plates in place install the 2 side bolts and tighten.

\*Passenger Side Shown



The upper shock brackets have a Driver and a Passenger side. Once placed onto the frame in the correct position the shock mount brackets will sit vertical.



**\*NOTE\*** If you had installed the top/rear bolt in the previous steps you will need to remove it.

Place the shock bracket up against the outer C-Notch plate lining up all 5 holes (4 on the side and one on top). Install the top bolt through the shock bracket and down into the C-Notch plate. Tighten down this bolt down but don't worry about torqueing it yet. Drill the 4 holes on the side using the plate as a template.

**\*Passenger Side Shown - Repeat this process on the Driver side.**



Install the 4 side bolts through the shock bracket and tighten.



Drill the remaining holes using the C-Notch plates as a template including the ones underneath.





You can now install all the hardware in front of the axle centerline and tighten.

\*Passenger Side Shown



Remove the nut from the bolt that is holding the top of each shock bracket.

Place the Panhard bar crossmember into place as shown. The 3 holes on each side of the crossmember need to line up with the 3 remaining holes on each C-Notch plate.



Lift the crossmember up into place lining up the holes. Install the washers and nuts to hold it into place.



This is what it will look like from underneath.



Install the remaining hardware and tighten.

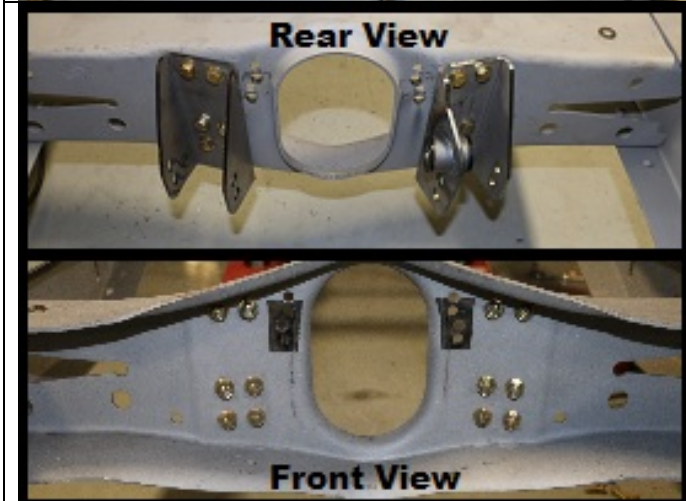


Make sure to install the one bolt on the bottom of the Panhard bar crossmember on both sides of the frame.



The link bar brackets are installed next. There is a left and a right. The Passenger side will have the additional Torque Arm mount.

All 6 holes on each bracket will line up with the existing holes on the driveshaft loop crossmember. Install the hardware and tighten.



This is what your crossmember looks like with the Link Bar brackets properly installed.





The next steps require the rear axle to be drained of all fluid and the rear cover plate to be removed.

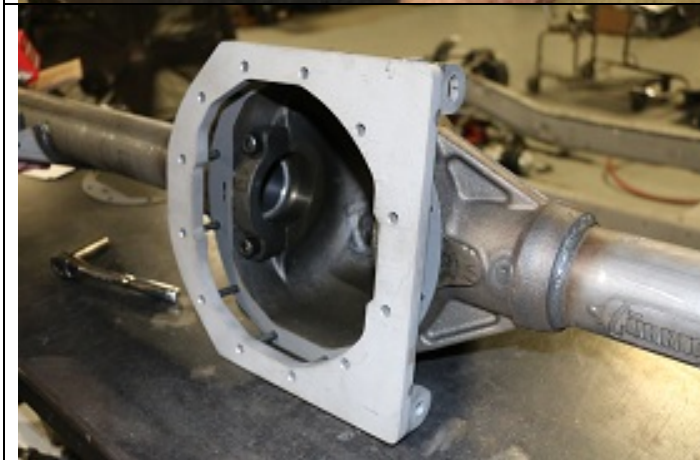
**\*NOTE\*** Make sure the mating surface is clean.



Using the double nut method install the provided studs into the housing with Loc-tite.



With all the studs installed and tight you can now place the first gasket into place.



Next to be installed is the Torque Arm plate. The tabs face towards the front of the vehicle and are on the passenger side. It will fit snug so be careful not to damage any threads.



The 2<sup>nd</sup> gasket can now be installed onto the back of the Torque Arm plate.



Last to go on is the rear cover plate



Install all the provided hardware and tighten.



The lower shock mount brackets are next to go onto the axle. There is a left and a right. The Passenger side is pictured. It has an additional bracket off the back to attach the Panhard Bar too.





Position the Lower Shock/Panhard Bar bracket underneath the factory Truck Arm axle bracket. Use the provided U-bolts and hardware to attach the Panhard Bar bracket to the axle housing.



Bottom view: Install the washers and nuts and tighten.



Repeat this process for the Driver side. Install the washers, nuts and tighten.



Position the axle underneath the frame and support it on jack stands. Place it as close to the axle centerline as possible. We centered the axle in the C-Notch opening. Position the pinion angle at roughly 2-3 degrees up.

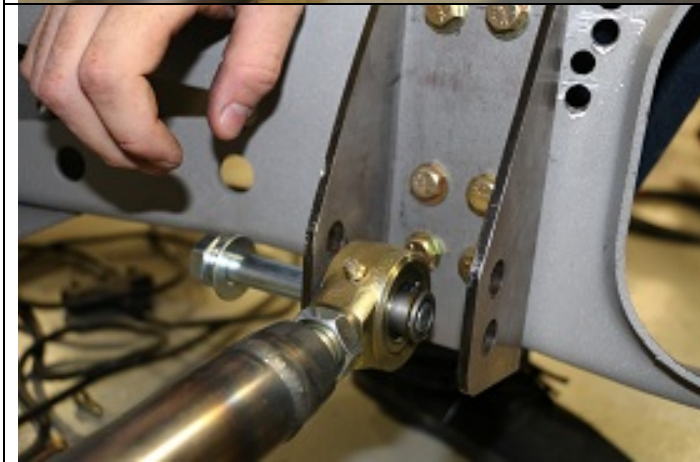
**\*NOTE\*** axle centerline and pinion angle will be adjusted more precisely a few steps later.



**\*NOTE\*** Use liberal amounts of the provided Energy Suspension 'PolyLube' on the I/D of the bushings and the O/D of the inner sleeves before installation.

Install the bushing side of the Link bars onto the axle brackets.

Install the washers, nuts and tighten.



Position the adjuster side of the link bar onto the driveshaft loop crossmember. You may have to make small adjustments to keep the rear axle in the proper location. Push the bolt to the end of the adjuster.

**\*Driver Side Shown**



Install the small sleeve on the inboard side of the adjuster.





Push the bolt the rest of the way through and install the washer and nut but leave them loose.



Repeat this process for the Passenger side.



Both link bars installed.



We need to mimic actual ride height. For this we measured 14.5" from the center of the top shock mounting hole on the frame to the center of the middle hole on the axle bracket. This measurement is the middle range of the shock travel. We chose the middle hole on the axle bracket so ride height adjustments up or down could be made with minimal variance in Pinion angle and side to side movement. Move the jack stands to hold the axle in this height position. If you are certain you want the truck at its lowest or highest setting you can use either the lower or upper holes respectively.



It is now time to install the Panhard Bar and center the rear axle.

**\*NOTE\*** Use liberal amounts of the provided Energy Suspension 'PolyLube' on the I/D of the bushings and the O/D of the inner sleeves before installation (Both Driver and Passenger sides).

This picture depicts the positioning of the hardware and sleeve once installed on the bracket. The non adjustable side of the Panhard bar goes on the Passenger side.



Once the Panhard bar is installed it will look like this.

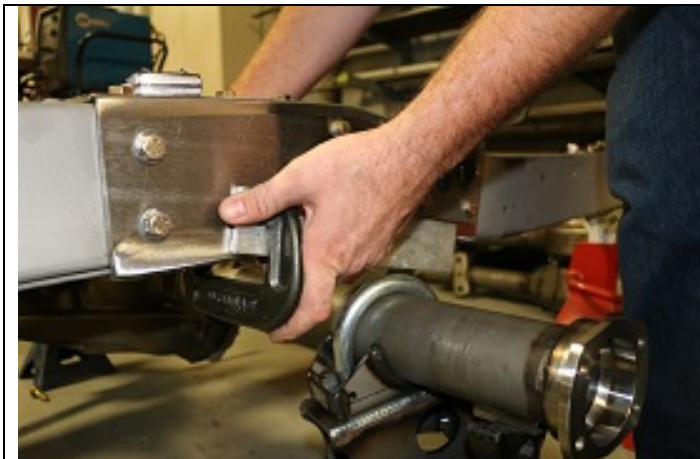
Tighten the hardware.



We now need to center the axle. We placed a couple scrap pieces of aluminum as straight edges and clamped them in place. It doesn't matter much where you place them on the frame so long as they are mounted the same on both sides.

**\*Passenger Side shown**





\*Driver Side shown



Take a measurement from the clamped on plate to the end of the axle (if your brakes are installed you can use the drum backing plate or disc rotor as reference)



Use the same measurement method on the other side and compare both sides. The measurement should be the same on Driver/Passenger sides so adjust the axle left or right depending on which way you need.



Once you are confident the axle is centered you can now adjust the rod end and install the hardware.



Tighten the jam nut.



Mock up Pinion angle. Place an angle finder on the back of the Torque Arm plate. Keep in mind that if your chassis is sitting completely level and NOT at proper ride rake this needs to be accounted for at this point. Our frame is sitting at roughly 2 degrees rake to mimic actual ride height.

Pinion angle theory is based on driveline angle. If your driveline angle is 2 degrees downhill your pinion angle should be 2 degrees uphill. If your driveline angle is 3 degrees downhill your pinion angle should be 3 degrees uphill and so on and so forth.



Setting wheelbase: We measured from the rear cab mount to the front face of the axle housing tube. Then we just eyeballed the axle centerline based on the center of the C-Notch.

The same measurement needs to be taken on both Driver and Passenger sides and compared.

**\*NOTE\*** Keep a close eye on the pinion angle during this process as it affects wheelbase.



If the wheelbase needs to be adjusted remove the front bolts from the crossmember and adjust them accordingly.

**\*NOTE\*** If you have to adjust one side more than the other the axle may not be centered anymore. Double check all measurements as you go along.





The Torque Arm Dog bones go in next. These are placed on the single bushing on the Passenger side Link Bar bracket on the Driveshaft Loop Crossmember.

**\*NOTE\*** Use liberal amounts of the provided Energy Suspension 'PolyLube' on the I/D of the bushings and the O/D of the inner sleeves before installation

One Dog Bone goes on either side of the Bushing.



Install the hardware but do not tighten it down yet.



Install the Torque Arm onto the upper Torque Arm plate on the axle using the provided hardware. Leave the washer and nut off at this point.



Install the bolt onto the lower Torque Arm plate. Leave the washer and nut off at this point.



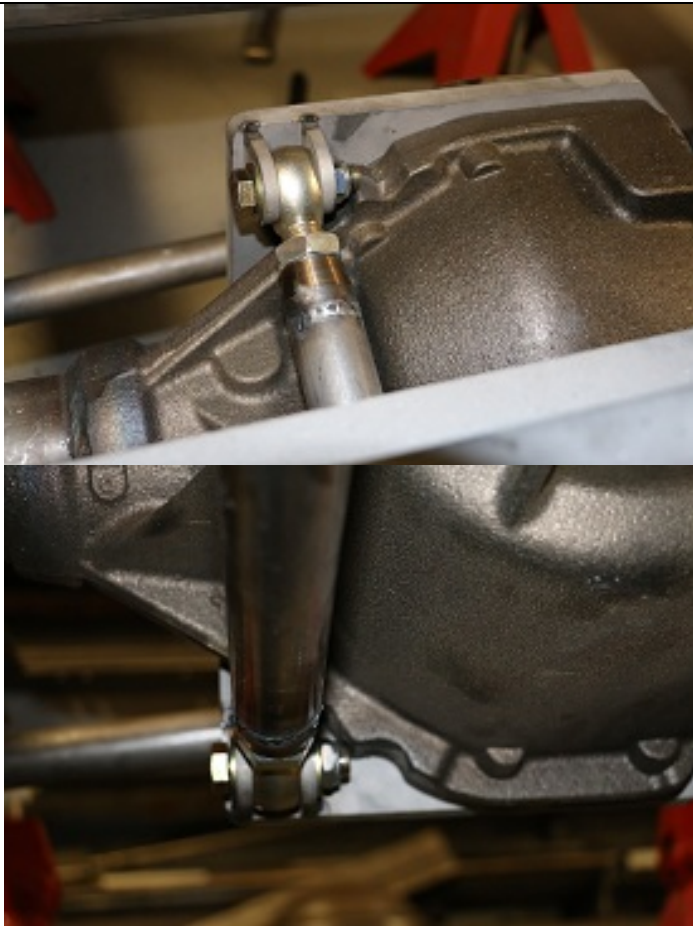
The Dog Bone needs to sit vertical with the Torque Arm attached and the rear axle at ride height. Make adjustments as needed.

Install the upper Dog Bone bolt. Leave the washers and nut off at this point.

Double check pinion angle. If it is correct proceed to the next step. If it needs to be adjusted remove one or both bolts from the Torque Arm plate and adjust the rod end accordingly. Repeat this process until the pinion angle is correct, the Dog Bone is vertical and the wheelbase is still correct.

Install the hardware on the Dog Bone and tighten.





Install the hardware on the Torque Arm plate and tighten.

You can now tighten down the front 5/8" Link Bar bolts.



Depending on how you optioned your Suspension package next to go on is either the Ridetech Coilovers or the Ridetech Shockwaves.

They both position themselves on the chassis in the same manner with the adjuster at the top pointing outwards.



**\*NOTE\*** Use liberal amounts of the provided Energy Suspension 'PolyLube' on the I/D of the bushings and the O/D of the inner sleeves before installation

Use the provided hardware and install the Coilover/Shockwave onto the upper shock mount.

Tighten down the upper bolts.



The lower shock bolt uses a spacer between the shock body and the axle bracket. There are three holes on the axle bracket that are for ride height selections.

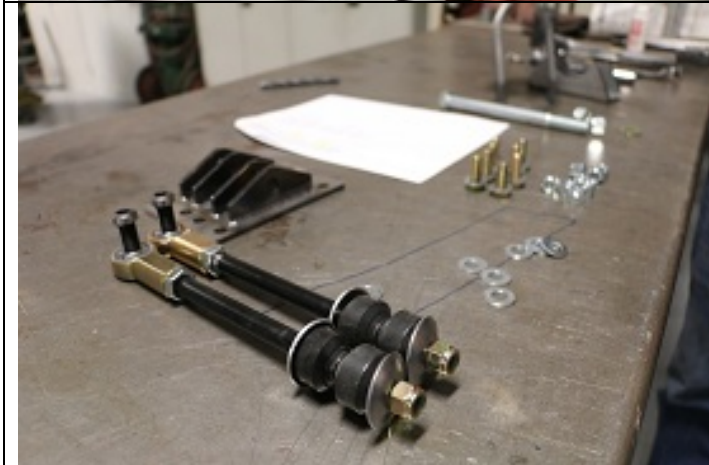
**\*Reminder\*** We used the middle hole during mock up measurements so that is where we placed the shock.

Install the remaining washer and nut and tighten.



Overall picture of the Ridetech Coilover installed.

If you didn't purchase the optional Anti-Sway bar you are finished.



**\*\*\*Installing the Optional Anti-Sway Bar.\*\*\***

**\*NOTE\*** The factory brake line bracket will need to be removed to install the anti-sway bar. A suitable replacement would be a bolt-on 3" bracket.



There are two upper link brackets in the kit, both of which are identical.





On the driver side of the factory shock crossmember there is a single hole on the back side we will be using. The bolt installs from the bottom going up.



\*View from underneath\*



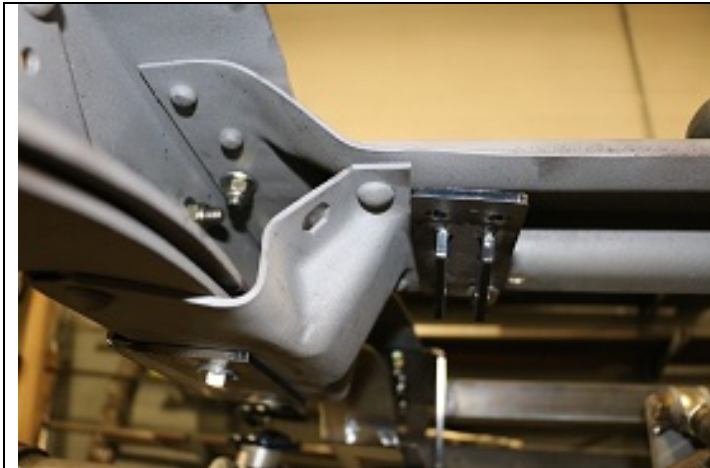
The edge of the new bracket will line up with the flange on the bottom side support.

Install the washer and nut and tighten this bolt down.

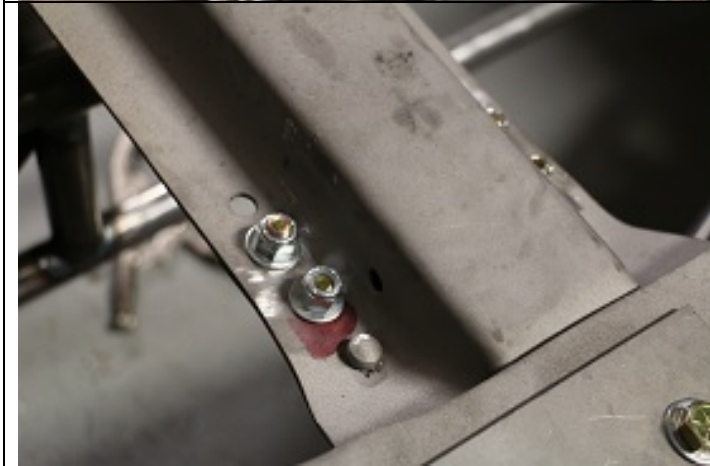
Double check that the edge of the bracket is flush up against the lip.



Place a vise grip or c-clamp on the bracket to hold it in place. Drill the remaining 3 holes and install hardware loosely.



Repeat this process for the passenger side. The only difference here is there isn't an existing bolt hole on the crossmember to begin with. The bracket just needs to be centered (front to back) on the crossmember and flush up against lip.



Tighten all hardware  
  
\*Passenger Side shown



**\*NOTE\*** Use liberal amounts of the provided Energy Suspension 'PolyLube' on the I/D of the bushings before installation  
  
Spread the bushing apart at the seam and slide it over the anti-sway bar at 21" Centers



Place the Saddle mounts over the bushings.





Slide the U-bolt over the axle, also at 21" centers.



Push the bolt on Anti-Sway bar bracket up onto the U-bolt while simultaneously lifting the anti-sway bar up into place.

\*Driver Side shown\*



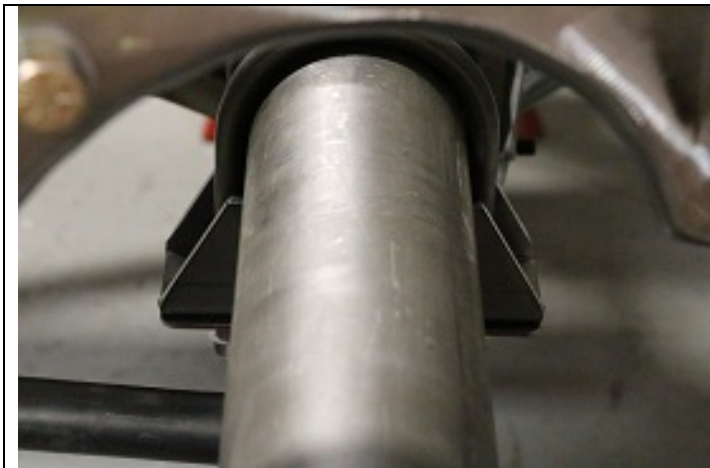
Get one nut started (with washer installed) to hold it in place for now.



Lift the other side up into place and install all hardware.

Install the hardware that was left off during the previous step.

\*Do not tighten down yet\*



The bottom of the bracket needs to be parallel to the ground.



Once the bracket is parallel to the ground you can tighten.



Place the rod end into the top bracket with the supplied hardware.

\*Passenger Side shown



Repeat for the other side.

\*Driver Side shown

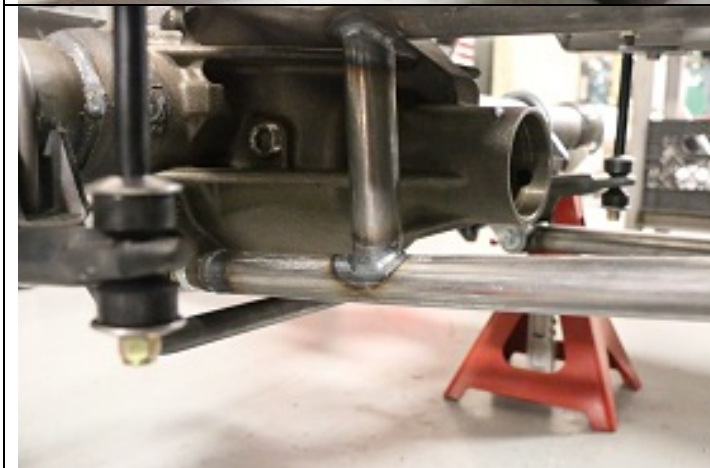




With the top bushing and cupped washer in place you can now lift the anti-sway bar up into place making sure the studs line up with the holes on the bar.

**\*NOTE\*** Use liberal amounts of the provided Energy Suspension 'PolyLube' on the bushings before installation

Small height adjustments at the rod end may be required to put zero preload on the bar.



Install the bottom bushings, cupped washers and nuts as shown.

Tighten down the nuts until the stud has protruded past the nylock on the nut.

Double check all mounting hardware.

No returns or exchanges without a RMA#.

Packages must be inspected upon receipt & be reported within 10 days.

If you are missing parts from your kit, TCI Engineering will send the missing parts via FedEx or U.S. mail ground.

Returned packages are subject to inspection before replacement/refund is given. (Some items will be subject to a 15% restocking fee)

Thank you for your business!

